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Witness, Subcommittee on Telecommunications, Consumer Protection, and Finance, Committee on Energy and Commerce, U.S. House of Representatives, 1983. Prepared statement and testimony appear in *Options for Cable Legislation*, 98th Congress, 1st Session.

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Witness, Subcommittee on Communications, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, 1976. Prepared statement and testimony appear in *Cable Television Regulation Oversight - Part 1*, 94th Congress, 2nd Session.

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ROBERT J. LARNER — Vice President

Ph.D.	Economics, University of Wisconsin, 1968
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B.A.	Economics, Georgetown University, 1964

Dr. Larner is a Vice President with responsibility in the areas of industrial organization, antitrust, and regulation. His fields of specialization are price theory, industrial organization, the economics of antitrust and government regulation, and the economics of innovation.

He has performed or directed much of CRA's research in the area of science and technology policy in projects funded by the National Bureau of Standards, the Office of Technology Assessment, and the National Science Foundation. A common theme in many of these studies has been an analysis and quantitative estimation of the effects of government policy on competition, innovation, and productivity in technology-based industries.

Dr. Larner has assisted counsel in a large number of antitrust matters involving a range of issues — monopolization, mergers and acquisitions, price-fixing, vertical restraints, damages, and government regulation. He has also estimated damages and/or analyzed damages claims in other types of litigation. The industries or economic activities he has studied include:

- Telecommunications
- Semiconductors
- Computers and computer software
- COM recorders
- Photographic products and services
- Pharmaceuticals
- Chemicals
- Electrical equipment
- Appliances
- Garage door products
- Building products
- Highway materials
- Broadcast and cable television
- Local advertising media
- Electric power
- Natural gas
- Petroleum
- Uranium enrichment
- Ocean shipping
- Air transportation
- Rail transportation
- Health care
- Payment systems
- Soft drink bottling
- Brewing
- Baking
- Floral wire services
- Department stores
- Men's clothing
- Perfumes
- Glass containers
- Distribution of food
- Distribution of alcoholic beverages
- Fast foods service industry
- Distribution of automobiles
- Distribution of petroleum products
- Shopping centers
- Home textiles and furnishings

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- Cement
- Industrial sands
- Iron ore
- Metal fabrication
- Steel tubing
- Ball bearings
- Weapons systems

PREVIOUS EXPERIENCE

Adjunct Associate Professor of Economics, Boston College, Spring Semester 1991.

Assistant Professor of Economics, Brandeis University, 1968–1976. Dr. Larner taught courses in price theory, industrial organization, the economics of regulation, principles of economics, and the history of economic thought.

Staff Economist and later Chief of the Division of Industry Analysis, Bureau of Economics, Federal Trade Commission, 1971–1973. As Chief of the Division, Dr. Larner had responsibility for supervising the unit's research projects, which were primarily industry studies and studies of the economic effects of trade practices.

Assistant Professor of Economics, Harvard University, Summer 1970.

Business Economist, U.S. Department of Commerce, 1964. Dr. Larner participated in preparing the Department's publication, *Survey of Current Business*.

TESTIMONY

Dr. Larner gave testimony before the Senate Antitrust and Monopoly Subcommittee in support of the Competition Improvements Act, Senate bill #S. 2028, February 4, 1976.

Mead Corporation v. Occidental Petroleum Corporation, 1978 (consulted to Wald, Harkrader & Ross representing Occidental and testified in behalf of Occidental).

Frank Saltz & Sons v. Hart Schaffner & Marx, 1984 (testified in behalf of plaintiff).

Philadelphia Fast Foods, Inc. v. Popeyes Famous Fried Chicken, Inc. et al., 1985 (testified in behalf of plaintiff regarding damages).

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Testimony before the Oklahoma Corporation Commission in behalf of TelaMarketing Communications of America regarding telephone access charges, 1986.

Testimony before the U.S. Department of Justice, Drug Enforcement Administration in behalf of Ciba-Geigy in the matter of Methylphenidate Quotas for 1986, 1986.

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Computer Associates International, Inc. v. Altai, Inc., 1990 (deposition and trial testimony in behalf of plaintiff regarding damages).

Symbol Technologies, Inc. v. Metrologic Instruments, Inc., 1991 (deposition testimony in behalf of plaintiff regarding damages).

AFFIDAVITS

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In Re Minolta Camera Products Antitrust Litigation, 1986; retained by both sides to evaluate proposed settlement between the states and Minolta.

Purofied Down Products Corporation v. Pillowtex Corporation, et al., 1987 (in behalf of defendant); evaluated competitive effects of proposed acquisition.

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In Re Panasonic Consumer Electronics Products Antitrust Litigation, 1989; retained by both sides to evaluate proposed settlement between the states and Panasonic.

Federal Trade Commission v. Imo Industries, Inc. and Optic-Electronic Corporation, 1989 (in behalf of respondents); evaluated competitive effects of proposed acquisition.

O'Brien International, Inc. v. H.O. Sports, Inc., et al., 1991, (in behalf of plaintiff); estimated damages from trademark infringement.

PROFESSIONAL ACTIVITIES AND HONORS

American Economic Association.

Journal of Industrial Economics. Associate Editor, 1977–1987.

National Science Foundation Graduate Dissertation Fellowship, 1966 to 1968.

SELECTED PUBLICATIONS AND PRESENTATIONS

Economics and Antitrust Policy. Coeditor with James W. Meehan, Jr. Quorum Books, 1989.

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"Vertical Price Restraints: Per Se or Rule of Reasons?" Paper prepared for the Economics Committee of the Section of Antitrust Law of the American Bar Association, March 9, 1987.

Discussant on the topic of the Per Se Rule on Resale Price Maintenance. Annual Meeting of Section of Antitrust Law, American Bar Association, New Orleans, August 1981.

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"Ownership and Control in the 200 Largest Nonfinancial Corporations, 1929 and 1963." *American Economic Review* (September 1966).

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Ph.D	Economics, UCLA
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Jane Murdoch is a Senior Associate in CRA's Economic Litigation Program. Her areas of expertise include industrial organization and public finance. Some examples of her CRA project experience include:

- An analysis of pricing and marketing practices in a price-fixing investigation of a national food producer;
- A study of measures of geographic and product market definition relating to the merger of electric utility companies; and
- An evaluation of the business relation between a major provider of cellular telephone services and its agent and an assessment of damages relating to an alleged breach of contract.
- Analysis of price movements of the products within an aerospace supplier's product line over a four-year period;
- Research of the likely competitive effects of relaxing regulations governing the provision of cellular telephone service by Regional Bell Operating Companies.

PROFESSIONAL EXPERIENCE

Pepperdine University

Instructor, Winter 1989. Taught upper-class econometrics course.

ICF Consulting Associates

Intern, Summer 1988. Participated in an empirical study of the effect of mergers in hospital markets and a project examining the effects of proposed price cap regulation in the telecommunications industry.

UCLA

Research assistant, 1988 and 1985 – 1986. Worked on empirical studies of the effects of Individual Retirement Accounts on households' saving behavior and households' demand for automobiles, respectively.

CRA

Teaching assistant, 1985 – 1986, 1986 – 1987, and 1988 – 1989. Led discussion sections for introductory and intermediate microeconomics courses.

HONORS

- Earhart Foundation Fellowship, 1986 – 1987 and 1987 – 1988.
- Mefferd Fellowship, 1988 – 1989.

DISSERTATION

"Executive Compensation and Firm Performance: The Relationship Between Monitoring Difficulty and the Use of Incentive Contracts." Completed July 1991.

AN ANTITRUST ANALYSIS OF THE MARKET FOR MOBILE TELECOMMUNICATIONS SERVICES

Prepared for:

CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION

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December 8, 1993

I. Introduction and Summary of Conclusions

The Federal Communications Commission recently released its Second Report and Order, In the Matter of Amendment of the Commission's Rules to Establish New Personal Communications Services.[1] The Cellular Telecommunications Industry Association (CTIA) has asked CRA to analyze certain antitrust aspects of the FCC's plans for Personal Communications Services (PCS).[2] Our analysis evaluates the appropriateness of, and need for, several of the limitations placed on cellular operators in bidding for licenses to use the portions of the radio frequency spectrum that have been allocated for the provision of mobile telecommunications services.

Under FCC rules, incumbent cellular operators may not acquire licenses in the forthcoming PCS auctions for more than 10 MHz in addition to their current holdings of 25 MHz in any region where their current service areas cover 10 percent or more of the population. New competitors may acquire licenses for up to 40 MHz of bandwidth. This restriction on incumbents means that, if a cellular operator currently holds licenses for even a moderately

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[1] GEN Docket No. 90-314, Issued October 22, 1993 (hereinafter Second Report and Order). The radio spectrum allocated for personal communications services is to be assigned by competitive bidding. See Notice of Proposed Rule Making, In the Matter of the Implementation of Section 309(j) of the Communications Act Competitive Bidding, PP Docket No. 93-253, Issued October 12, 1993. According to the Second Report and Order, cellular and PCS operators are expected to offer similar, if not identical, services; PCS firms will, therefore, compete directly with cellular companies. Because both sets of firms are expected to offer the same services and compete for the same customers, in order to eliminate confusion we refer to these offerings as mobile telecommunications services. Mobile telecommunications services include the full range of offerings that may be provided, by either existing cellular or new PCS companies.

[2] In two earlier papers filed with the FCC, one of the present authors addressed several similar issues. See S.M. Besen, R.J. Larner, and J. Murdoch, "An Economic Analysis of Entry by Cellular Operators in Personal Communications Services," November 1992; and, by the same authors, "The Cellular Service Industry: Performance and Competition," November 1992.

populated region within a Major Trading Area (MTA), it may not bid for licenses for the use of either Channel A or B (30 Mhz each).

Evaluation of the economic implications of the Commission's rules requires an antitrust analysis of the market for mobile telecommunications services. For example, analysis of the effects of the rule that limits cellular carriers to bidding for a license for the use of a single 10 MHz band in their territories requires a definition of the relevant geographic market within which mobile services providers compete. Similarly, an evaluation of the effects of permitting cellular operators to acquire licenses for additional bandwidth in the PCS auction, or in the aftermarket, requires product and geographic market definitions, as well as calculations of market shares and concentration before and after the acquisitions. Finally, an overall evaluation of competition in this industry must take into account the wide variety of factors that influence and determine market performance in addition to market structure. Because of the need to discuss a full range of these antitrust issues, this report addresses the following:

- the general principles underlying an antitrust analysis. Basically, we assess why public policy seeks to rely on competition, and under what circumstances competition is likely to lead to economically desirable outcomes (Section II);

- the relevant antitrust product and geographic markets within which PCS specifically, and mobile telecommunications services generally, should be evaluated (Section III);

- the proper measure of market shares, and the evaluation of a range of possible market structures for mobile telecommunications services (Sections IV and V); and

- whether or not the market for mobile telecommunications services is likely to be competitive (Section VI).

We reach the following conclusions:

- The product market for mobile telecommunications services is broad. Available evidence suggests that firms offering mobile services will be able to shift among a wide range of different services rapidly and at relatively low cost. The ability of firms to change the services they provide in response to price and profit opportunities ties virtually all of the various mobile telecommunications services into one broad market; narrow, relevant antitrust markets limited to specific services would be exceptional. To the extent that there is some limited class of services that has special requirements (very broad spectrum needs, for example), such services might constitute more narrow markets and, therefore, require individual attention.

- The scope of the geographic market for mobile telecommunications services depends on whether providers may charge different prices to customers in different regions. If price discrimination is permitted, among, for example, Basic Trading Areas (BTAs), then narrow regions like BTAs may be relevant geographic markets. If, however, price discrimination is barred, the geographic market will often be much broader, typically becoming substantially larger than a BTA.

- Within the broad market for mobile telecommunications services, the <u>capacity</u> to transmit information is the appropriate measure of market share. Bandwidth, however, is not necessarily an appropriate measure of capacity. The ability to transmit information within a given amount of spectrum is determined in part by the technology adopted, and newer, digital systems have a far greater capacity than do older, analog ones. Because existing cellular operators will, for some time, be required to continue to serve customers that have invested in analog equipment, they will have lower effective capacity and market share per unit of allocated bandwidth than will firms with licenses for the same amount of bandwidth that employ only digital equipment. Incumbent cellular operators will suffer this "analog handicap" for as long as they must continue to serve customers using the old technology. The share of the mobile telecommunications market held by cellular firms will thus be less than their share of assigned bandwidth.

- Significant efficiencies will be obtained if cellular operators are permitted to provide Personal Communications Services. These efficiencies stem from economies of scope, cost savings that result when the same firm provides more than one service. Some of these efficiencies would be sacrificed if limits were placed on the acquisition of PCS licenses by incumbent cellular operators.

- Contrasted with the standards in the "Department of Justice and Federal Trade Commission Horizontal Merger Guidelines," and current legal enforcement of the antitrust laws, the market structure standards adopted in the <u>Second Report and Order</u> are both overly rigid and conservative. For example, the current rules limit the amount of spectrum that may be licensed to an incumbent cellular carrier in the PCS auctions to 10 MHz. Depending on the assumptions adopted, this bandwidth would give an incumbent cellular operator between 17 and 20 percent of market capacity. Yet the Merger Guidelines pose no strict bar to acquisitions by firms with market shares in this range. Indeed, the Merger Guidelines evince no concern with acquisitions that leave a single firm with a post-acquisition share of less than 35 percent, assuming other conditions are met.

- Even in the most highly concentrated market structure possible under pending PCS rules, the Merger Guidelines would not bar, and might not even warrant investigation of, significant acquisitions of additional capacity by incumbent cellular operators. For example, even if there are only five or six mobile service providers, the acquisition of an additional 5 MHz of spectrum by a cellular operator that already has 35 MHz would not violate the Guidelines. And, if the added 5 MHz of capacity were acquired from a competitor with 35 or 40 MHz allocation, measured concentration might remain the same, or even decline.

- Even if the number of mobile service competitors were quite small, there is a variety of factors that act to inhibit the exercise of market power. Key features of the emerging market for mobile telecommunications services are the anticipated tremendous dynamism of the technologies that may be available and the range of services that may be offered. Such market dynamism may, for example, result in firms continuing to adopt new, more capable technologies that lead to rapid expansion of industry capacity. Moreover, such capacity expansion may also come from a rapidly expanding competitive fringe, which today is dramatically illustrated by the consolidation and digitization of SMR operators to provide an array of mobile telecommunications services. Combined with rapid market growth, these factors tend to limit anticompetitive behavior by mobile telecommunications service providers.

- In many instances, the courts have adopted more liberal and flexible standards for evaluating mergers than those articulated in the Merger Guidelines, rejecting numerous attempts by the antitrust authorities to block proposed transactions. Generally, the courts have found analysis of market shares and concentration to constitute only one factor, albeit an important one, in evaluating mergers, and have placed great weight on other, non-structural market conditions. Many of the factors commonly recognized to reduce the likelihood of anticompetitive behavior are present in the market for mobile telecommunications services.

- We conclude that rules governing the structure of the market for mobile services, under the terms currently contemplated in the Second Report and Order, may prevent a variety of merger and acquisition transactions that do not threaten to reduce competition or raise prices of mobile telecommunications services and that in fact promise significant efficiencies. Many such transactions may be unobjectionable on purely structural grounds. Moreover, when considered in light of other factors that inhibit coordinated behavior and collusion, a more flexible rule of reason approach is warranted. We would urge that the Commission entertain the notion that incumbent cellular operators be allowed to acquire additional spectrum after the PCS auctions are conducted.

II. The Role of Competition

Economic policy seeks to rely on competition for a variety of reasons. When firms compete, prices are driven toward costs, society's resources are efficiently allocated among the various goods and services that can be produced, and consumers must pay no more than necessary to secure these products. Moreover, firms in competitive markets are under continuing pressure to adopt new products, services, technologies, and cost-reducing innovations, whose benefits are passed on to consumers.[3] When firms do not compete, the principal fears are that prices will rise above costs, resources will be inefficiently allocated, and income will be transferred from consumers to producers.[4]

Analyses that identify the benefits of competition typically begin with an examination of markets in which there is a large number of firms, each selling a homogeneous or relatively undifferentiated product, and where the entry or exit of firms is either free or easy. In such a setting, no single firm or group of firms has the ability to raise price above cost. No single firm can raise prices to consumers without rapidly losing sales to rivals — either existing firms or new entrants — and there are so many competitors that no group of them successfully can coordinate their behavior — either tacitly or overtly — to raise prices above competitive levels.

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[3]For a discussion of the benefits of competition, and the harm associated with monopoly, see F.M. Scherer and D. Ross, Industrial Market Structure and Economic Performance, Third Edition (Boston: Houghton Mifflin, 1990), pp. 18-29.

[4]We recognize that the Commission is also concerned with diversity of ideas and diversity of ownership. Our focus is solely on the economic effects of competition in the provision of mobile telecommunications services, since issues of diversity of ideas do not arise here. We do not address the issue of ownership diversity.

Moreover, in markets with many competitors, firms are under constant pressure to offer consumers a wide range of products and/or services, or else face the threat that rival firms or new entrants will do so. Finally, firms in competitive markets are driven to introduce cost-reducing technologies in order to avoid being placed at a cost disadvantage relative to their rivals.

In many real-world markets, the number of rivals is smaller than that identified in the textbook treatment of competition. It does not follow, however, that economic policy should attempt to maintain a market structure with a very large number of firms. For one thing, this might involve the sacrifice of significant cost savings from exploiting economies of scale and scope. Moreover, most economists believe that many of the desirable outcomes resulting from market structures in which there are large numbers of firms can be achieved even if the number of firms in a market falls short of the competitive ideal. In practice, the ability of an individual firm or group of firms to raise prices is limited by a wide variety of factors. A single firm must have a large share of a market before it can unilaterally raise prices. And even in markets where there are relatively few firms, coordination of behavior to raise prices is often very difficult. Thus, while economists generally believe that the likelihood of noncompetitive, coordinated behavior is limited when the number of firms is relatively large, markets may behave very competitively even when they are composed of only a few firms and concentration is relatively high.

Evaluating competition in markets composed of only a few firms is challenging. When the number of firms is limited and market concentration is high, there is no single, easily applied rule for assessing the extent of competition, or of determining how far market performance departs from the competitive ideal. As a result, public policy analyses often focus not on determining the precise number of firms necessary to achieve the competitive benefits of intense rivalry, but on whether or not specific changes in a market, particularly reductions in the number of firms or increases in market concentration, result in unacceptable threats to competition. For example, in enforcing the merger provisions of the antitrust laws, the Federal Trade Commission and the Antitrust Division of the Department of Justice evaluate whether a specific merger or acquisition is likely substantially to lessen competition.[5] We pursue this approach below in evaluating competitive conditions in the mobile telecommunications market.

The array of factors that must be taken into account in determining whether or not competition prevails in a market, and whether or not competition may diminish as a result of a reduction in the number of competitors, is quite broad. The analysis typically begins by defining the relevant product and geographic markets, and then evaluates the market's structure, principally the number and size distribution of firms. The key concern in focusing attention on these features of market structure is that, as the number of firms is reduced, the probability that the remaining firms can raise prices to consumers may be increased.

The analysis, however, does not step there. Close consideration also is given to conditions of entry by new firms and expansion by existing ones, as well as to a variety of other factors that influence the conduct of firms. For example, even in markets that are relatively concentrated, if incumbent firms can expand, or new competitors can enter the market rapidly, firms will be unable for long to maintain prices at supracompetitive levels.

[5]"Department of Justice and Federal Trade Commission Horizontal Merger Guidelines," April 2, 1992, Bureau of National Affairs, Special Supplement. [Hereinafter "Merger Guidelines" or "Guidelines."]

If expansion or entry is easy and will occur rapidly in the face of high prices, high levels of concentration may still be consistent with competitive market performance. Moreover, even when market concentration is relatively high, firms may be unable effectively to coordinate their behavior and raise prices to consumers. Attempts by firms jointly to raise and sustain prices above competitive levels are limited by many factors, such as cost differences among them, differences in the range of products offered, rapid technical change in both products and services, and rapid market growth.[6]

If market conditions are changing rapidly, and are expected to continue to change rapidly in the future, the very fact of this market dynamism may prevent firms from coordinating their behavior and raising prices. In such circumstances, which are present in the mobile telecommunications market, even high levels of concentration may be acceptable, especially where economies of scale or scope permit larger firms offering a wider array of products or services to experience lower costs.

Analysis of the competitive consequences of changes in market structure -- reductions in the number of firms and increases in concentration -- proceeds in the following manner:[7]

- Market Definition and the Identity of Competitors. The relevant product and geographic markets within which the firms compete are defined, and the firms that compete in those markets are identified.

- Number of Competitors and Concentration. Within the relevant markets, the number of firms and levels of market concentration are summarized and evaluated by the computation of summary statistics, including the Herfindahl-Hirschman Index (HHI). If the concentration numbers are low by generally accepted standards, there is a

[6]Lawrence J. White ("Antitrust and Merger Policy: A Review and Critique," Journal of Economic Perspectives, 1, 13-22, Fall 1987, pp. 17-18) discusses some of the "other market characteristics" that are taken into account in the Guidelines.

[7]This description is patterned on the analysis outlined by the Merger Guidelines.

presumption that competition prevails, and that changes in concentration pose no material threat that competition will be harmed by a reduction in the number of competitors.

- Expansion and Entry. The ease with which existing firms may expand or new firms enter a market is evaluated. Even when market concentration exceeds generally accepted levels, the ability of existing firms to expand or new firms to enter may undercut the ability of existing firms to raise prices above competitive levels.

- Factors Inhibiting Coordinated Behavior. Factors that limit collusive behavior are assessed. When market concentration exceeds generally accepted levels, the ability of firms to coordinate behavior and raise prices above competitive levels may be inhibited by a large number of market characteristics. For example, sustained and rapid change in supply or demand, or both, may effectively prevent coordinated market behavior.

- Efficiencies. Economies of scale or scope that result when firms are combined are examined. Even where the risk of coordinated behavior is enhanced through merger, this factor must be weighed against the associated cost savings. Economies may result from increasing the output of the same product within a single firm (scale), or from combining the production of two or more products in a single firm (scope), or both. If these efficiencies are sufficiently great, they may more than compensate for the additional risk created by increased concentration.

We generally follow this approach in our analysis of competition in the mobile telecommunications market.

III. Defining the Mobile Telecommunications Services Market

We define the relevant product and geographic markets for mobile telecommunications services for several reasons. In particular, market shares and concentration typically have relevance only within economically meaningful markets. A predicate, therefore, to interpretation of shares and concentration is identification of the relevant markets within which mobile service providers compete. Moreover, the FCC has specified limits to the amount of bandwidth for which cellular companies may obtain licenses in the forthcoming PCS auctions. Analysis of the reasonableness of these restrictions on cellular company licensees requires identification of the relevant geographic markets. If, for example, geographic markets are broader than individual BTAs, so that shares and concentration within those regions have no economic significance, the strict limits on cellular company acquisition of PCS licenses might, in some locales, be relaxed without risking anticompetitive outcomes.

Basic Principles

Defining the product and geographic markets for mobile telecommunications services requires identification of the group of firms that determine the price of a specific service or group of services, and specification of the geographic regions within which prices are determined. Market definition precedes an analysis of how competition in the mobile telecommunications market is affected by the industry's market structure, or by a reduction in the number of competitors, or by an increase in concentration.

The Merger Guidelines provide a sound methodology for defining relevant product and geographic markets, and for identifying the competitors within those markets.[8] Basically, the Merger Guidelines pose a series of hypothetical questions, the purpose of which is to identify the narrowest group of products, and the smallest geographic region, within which sellers profitably could raise prices. In assessing market definition, one does not consider the identity of individual sellers. One simply asks whether, if a hypothetical single-firm monopolist raised the price of a product sold within a specific geographic region, that price increase would be profitable. If the hypothetical price increase would not be profitable, the implication is that many consumers must either have shifted their purchases to other products, or to the purchase of the same products sold by firms in other geographic regions. If enough consumers switch

[8]¶¶ 1.1, 1.2, and 1.3 of the Merger Guidelines describe basic principles of market definition and identification of market competitors.

to competing products so that the hypothetical price increase is unprofitable, then the market must be expanded to include those other products; the relevant product market is broader than, and includes more products than, the tentative antitrust market. Similarly, if the price of a product sold in a specific region is raised but consumers switched their purchases to sellers in some other region, then the geographic market must be expanded to include these other suppliers. One has successfully identified the relevant product and geographic market only when the hypothetical price increase is profitable.

We can illustrate these principles with an example. Assume that there was a proposed merger between the only two Ford automobile dealerships in Alexandria, Virginia. Evaluating market definition would begin by posing the question of whether the merged firm profitably could raise the price of Ford automobiles sold in Alexandria. If, after raising the price, the Ford dealer found that it lost significant sales to other vehicle brands (Chevrolets or Hondas, for example) sold by dealers in Alexandria, so that the price increase was not profitable, the dealer would be forced to rescind the increase to counteract the loss in sales. One would conclude that the product market was broader than just Ford vehicles.

The Ford dealership in Alexandria might also lose sales to Ford dealerships in Arlington. If a sufficient number of buyers shifted to Ford dealers located outside of Alexandria so that the price increase was not profitable, then the geographic market would be broader than Alexandria, and would also include sellers in other regions.

To define the relevant product and geographic market, one would continue to add competing automobile brands and sellers in adjacent regions until the smallest group of firms that sold the product in the narrowest region that could profitably raise the price was identified.[9] In the example above, the relevant market might be the sale of some broad class of automobiles (all small and mid-sized cars, for example) in the entire Washington metropolitan area. The key issue in this, or any, market definition analysis is to identify the full range of sellers that might prevent the hypothetical monopolist from raising prices. If such constraints on pricing exist, the market is broader than originally proposed.

Note that the identification of the relevant product and geographic markets described above is based solely on the reaction of consumers to an assumed increase in price. However, competing firms may begin supplying a relevant product so rapidly that, although they do not now sell the product, they are, nonetheless, participants, or competitors, in the market. Under the Merger Guidelines, if, in the face of a price increase, a firm that does not currently produce and sell a product would likely begin to do so at low costs and within one year, then it is "in the market." If a firm is in a market through such supply response, then its capacity must be taken into account in evaluating the number of firms and market shares.

More technically, a firm that begins selling the product within one year must be able to switch its capacity to the production of that product without incurring significant sunk costs.[10] Sunk costs are costs that cannot be recovered if the firm subsequently decides to exit the

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[9]Because of "chain reaction" effects, an analysis that begins by considering a limited set of products, or a narrow geographic region, may end up identifying broad product and/or geographic markets. For example, assume that the analysis above found that Alexandria could not be a relevant geographic market, and that the market had also to include Arlington. In the next round of analysis, one would hypothesize a price increase by auto dealers in both Alexandria and Arlington. That analysis might find that significant sales were lost to dealerships in Montgomery County. Thus, even though Alexandria, the locale of the merging firms, does not border Montgomery County, the two regions could be in the same relevant geographic market.

[10]See Merger Guidelines, ¶ 1.32. A supply response that requires more than one year and/or involves substantial sunk costs is considered separately in evaluating barriers to entry. See Merger Guidelines, ¶ 3.